1. (1p) Briefly define each of the following terms:
   a. Alphabet

   b. String

   c. Language
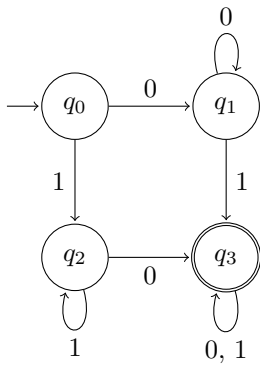
2. (0p) Are strings necessarily finite?
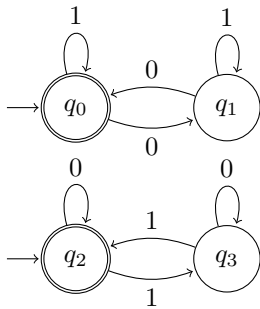
   a. Yes   b. In this class, yes

3. (3p) Give a brief, English characterization the language of each of the following NFAs.
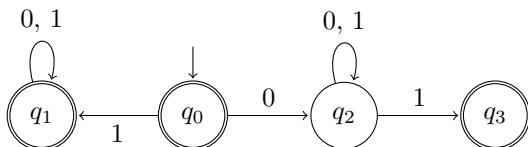   a.

   b.

   c.

4. (2p) Let $M_1 = (Q_1, \Sigma, q_0^1, \delta_1, F_1)$ and $M_2 = (Q_2, \Sigma, q_0^2, \delta_2, F_2)$ be two DFAs. Formally write out expressions for the values of the five components of a DFA recognizing the language $L(M_1) \cap L(M_2)$.

$Q' =$

$\Sigma' =$

$q_0' =$

$\delta' : Q' \times \Sigma \to Q'$, given by

$F' =$

5. (1p) What component(s) of the solution above would change if the set operation involved were union instead of intersection?

6. (1p) What is the type of the transition function of an NFA?

7. (1p) What is the name of the class of languages that NFAs can recognize?